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CUSTOMER CASE STUDY

JR East develops new mobile application with Extreme Programming (XP)

Aside from its main offerings, East Japan Railway Company (JR East) provides a wide range of services it categorizes as "Mobility as a Service (MaaS)", which are not limited to railways and stations.

To stay relevant amid the competitive landscape, JR East leveraged VMware Tanzu Labs™ to learn Lean Extreme Programming (XP) to develop a new information service. JR East participated in the engagement twice and acquired a wide range of product management, product design, and engineering skills.

Solution

JR East engaged VMware Tanzu Labs to learn Lean XP techniques from various roles like product management, product design and engineering. It has accelerated in-house production and has revamped a previously inefficient development system that was highly dependent on vendors. In anticipation of mobility as a service (MaaS), JR East has also redesigned the operation information application and has built a system that supports its needs.

Challenges

- Previous operation information application was not was user-friendly
- The company had to move to user-oriented services in anticipation of MaaS
- Shortage of talent with knowledge on in-house application development

Outcomes

- An efficient system for continuous applications improvement built through Lean XP
- User-friendly applications developed
- Boosted team morale and equipped team with necessary skills, accelerating in-house production

JR東日本

INDUSTRY

Transportation

CUSTOMER PROFILE

In 1987, East Japan Railway Company, more commonly known as JR East, took over the railway business from Japanese National Railways. By April 2019, it was operating 69 lines covering about 7,401.7 kilometers. Apart from owning railway lines in the areas of Tohoku, Kanto, and Koshinetsu, the company has also ventured into businesses like retail, transportation, travel, food and beverage, and advertising. In addition to operating transportation services with "ultimate safety" as the aim, JR East hopes to expand into lifestyle services - by "enriching human life" as a start.

"We learned the methodologies and technology underlying Lean XP from Tanzu Labs, including other skills such as how to better communicate with team members. The entire team has grown significantly from this, and I believe this will become the best practice in JR East. In particular, the "lean" method of eliminating waste can be applied to various tasks. We plan to replicate it throughout JR East."

Yukiko Ono
Deputy General Manager,
MaaS Business Promotion Division,
Information Business Strategy, Technology Innovation Headquarters of East Japan Railway Company

VMWARE FOOTPRINT

VMware Tanzu™ Labs™

In April 2019, the company launched the new JR East App and built a system to enable continuous application enhancements.

Leveraging Lean XP to enhance value creation and develop the new JR East App

JR East operates passenger and freight railways that span across Tohoku, Kanto, and Koshinetsu. Its mission has always been to "provide services starting from railways." As part of its corporate vision, Transformation 2027, announced in 2018, the company looked towards enhancing its services and creating human-centric value and services.

"In the railway business, we have started reforms leveraging IT and data utilization like "Shinkansen e-tickets" launched in March 2020. We are also strengthening and expanding our services beyond supporting railways and stations to offer Mobility as a Service (MaaS). As part of this effort, the new and improved JR East App was launched in February 2020," said Yukiko Ono, Deputy General Manager of MaaS Business Promotion Division (Information Business Strategy/ICT Business Promotion) under the Technology Innovation Headquarters of East Japan Railway Company.

When the original JR East App first launched in 2014, it focused on providing updates on train delays and station information. However, users found it challenging to utilize its diverse functions fully.

With the new JR East App, users can now enjoy a user-friendly interface and value-added services and content. For example, users can search for different routes to their destination, including commuting options via rail, subways, and buses nationwide or even by walking.

The operation status and station information are also more comprehensive, including how crowded stations are during peak periods. Services are now more seamless, and there are a wide variety of games, e-books, news, and online shops for users to choose from. The app is also widely used by JR East's staff to guide passengers at stations.

"We were developing an easy-to-use app for Deutsche Bahn, and we felt it was a great reference. With the help of IDEO Tokyo, a design consulting firm, we conceptualized the app. Still, the application development was time-consuming and lacked flexibility. Hence, we looked towards learning Lean XP

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Kenichi Ito
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and engaged Tanzu Labs," said Kenichi Ito, ICT Business Promotion Group Leader, MaaS Business Promotion Division, Technology Innovation Headquarters.

Through Tanzu Labs, JR East's team was engaged in hands-on learning of application development methods for functional roles such as product management, product design, and engineering, while developing software. This learning method also solved the problem of being unable to identify problems when they outsource work to vendors. Working in pairs helps facilitate the learning between participants and the Tanzu Labs team.

With a 25-year history in "Lean Startup," a product management method that can flexibly respond to changes, Tanzu Labs focuses on a user-centric design and extreme programming which improves flexibility, speed, and quality. Learning directly from Tanzu Labs proved to be of great value to JR East.

Immersing in the culture of VMware Tanzu Labs

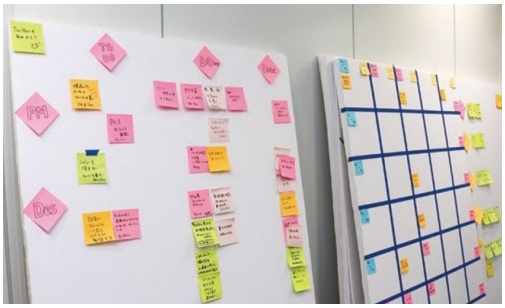
As a first step, JR East sent its staff, including representatives from partner companies to Tanzu Labs to learn the basics of software and app design. At the second meeting held in 2019, three new members from the ICT Business Promotion Group, a product manager, a product designer, and an engineer, joined to strengthen the development of full-scale MaaS initiatives.

Takanori Abe of the ICT Business Promotion Group, who participated as a product manager, learned the techniques from the Tanzu Labs staff in the first two months. He then worked together with them in the next month and was able to work independently in the last month.

"I learned a lot, from how to organize a team, how to communicate with team members, and how to set up a lean startup. I find it very effective to receive feedback immediately as it helps with understanding my areas of improvement. The office environment of Tanzu Labs is also very diverse, and one of my key takeaways has been learning more about diversity," said Mr. Takanori Abe.

Mr. Abe, who often holds discussions with product designers, said that it has been impressive to see them adopt a more user-centric mindset throughout the engagement. "I learned that it is important not only to learn 'about' the user, but also to learn 'from' the user," continued Mr. Abe.

Mr. Shun Sugawara of the ICT Business Promotion Group participated as an engineer. He recalled learning a wide range



▲ Through Tanzu Labs, JR East's team engaged in hands-on learning of application development methods and leveraged Lean XP to to improve JR East's product development

of specific skills and experiences from the Tanzu Labs team. In a team of about 10 engineers, they worked in pairs while developing products. Because of the different pairings for each activity, they had the opportunity to learn from each staff member's strengths.

"As we were working in pairs, we were able to discuss the details and make effective decisions with minimal reviews, speeding up the learning and upskilling of the entire team. I learned various methods in the process, not just about the technology, but also fundamental techniques. These included how to turn switches on and off and how to keep improving product quality. We were also trained to handle tasks aside from development at a fast pace," said Mr. Shun Sugawara.

Mr. Ito, the leader of the ICT Business Promotion Group, pointed out that the three team members who participated in the second engagement have since progressed significantly. "They are actively putting into practice what they have learned at Tanzu Labs and are working to foster a new culture that Japanese companies lack. I feel that having this knowledge will give us an edge over the other companies, especially in the next 10 years."

Leveraging Tanzu Labs' method and culture for MaaS and cross-industry collaboration

By leveraging real-time insights into users' feedback, the JR East App has evolved to provide a superior user experience. Mr. Abe and his team hope to continue developing the app into a platform that can address its users' more ongoing concerns.

▲ UI of JR East new application as a result of VMware Tanzu Labs

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ICT Business Promotion Group,
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East Japan Railway Company

Shun Sugawara
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"The methods we learned from Tanzu Labs will continue to be best practices for JR East's product development in the future. In particular, the 'lean' method of eliminating waste can be applied in various operations. Also, as MaaS is used by a wide variety of business owners and local governments, I hope to share what I have learned so that MaaS can embrace a user-centric perspective, ultimately improving the lives of our users in the future," shared Ono.

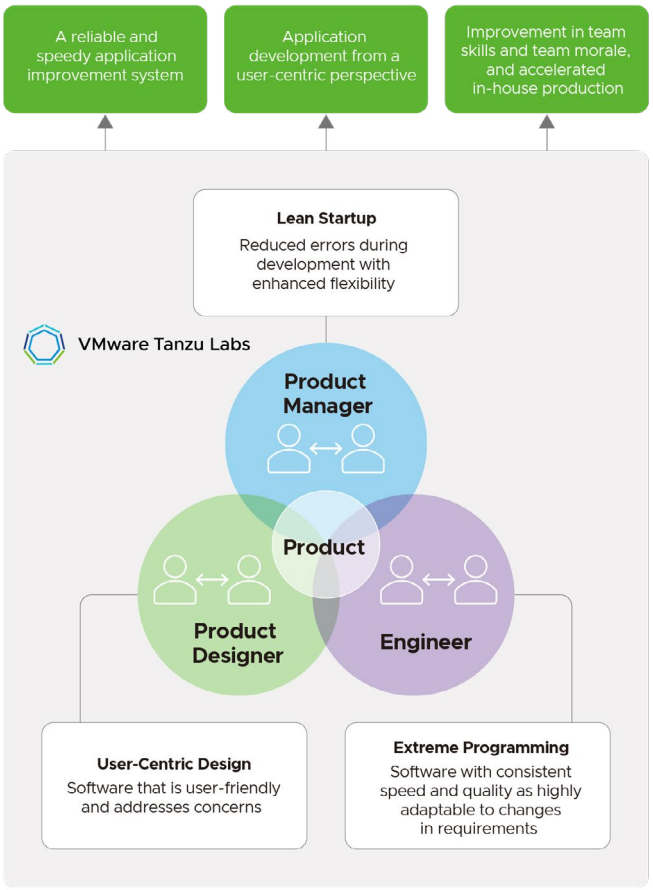

Figure: VMware Tanzu Labs where Lean XP is mastered by different functional roles.